

A decorative graphic on the left side of the slide, consisting of several overlapping blue rectangular shapes of varying heights and widths, creating a stepped effect. The top-most shape is a small dark blue rectangle. Below it is a taller, medium blue rectangle. At the bottom is the tallest, lightest blue rectangle.

FreeBSD

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# Outline

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- ❑ FreeBSD version
  - 9.2-RELEASE
- ❑ Installing FreeBSD
  - From CD-ROM
  - From USB

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FreeBSD Version

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# FreeBSD Branches/Tags

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## □ Three parallel development branches:

- *-RELEASE*
  - Latest Release Version:
    - 9.2 (September, 2013)
    - <http://www.freebsd.org/releases/>
- *-STABLE*
  - Tested new features and bug fixes
  - MFC: Merge From Current
- *-CURRENT*
  - Working space for FreeBSD developers
  - Current version:
    - 10.1-CURRENT
    - <http://www.freebsd.org/releng/>

# FreeBSD Version

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## ❑ FreeBSD–A.B.C–Type

- A: major version Number
- B: minor version Number
- C: slight patch version number
- Type: version type
  - PRERELEASE
  - BETA
  - RC
  - RELEASE
  - STABLE
  - CURRENT

## ❑ Choosing the FreeBSD Version That Is Right For You:

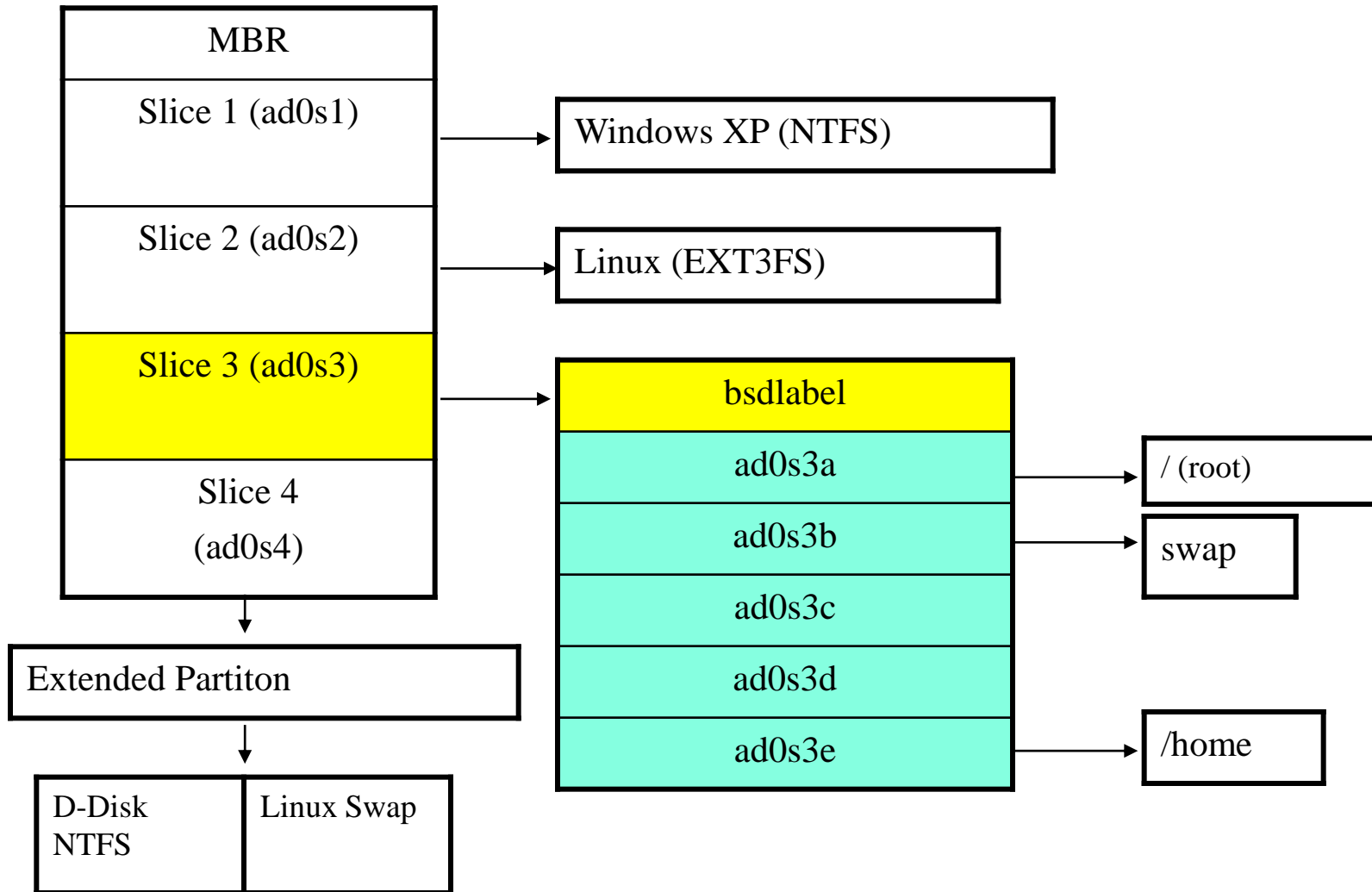
- <http://www.freebsd.org/doc/en/articles/version-guide/>

A decorative graphic on the left side of the slide, consisting of several overlapping blue rectangular shapes of varying heights and widths, creating a stepped effect.

# FreeBSD Installation

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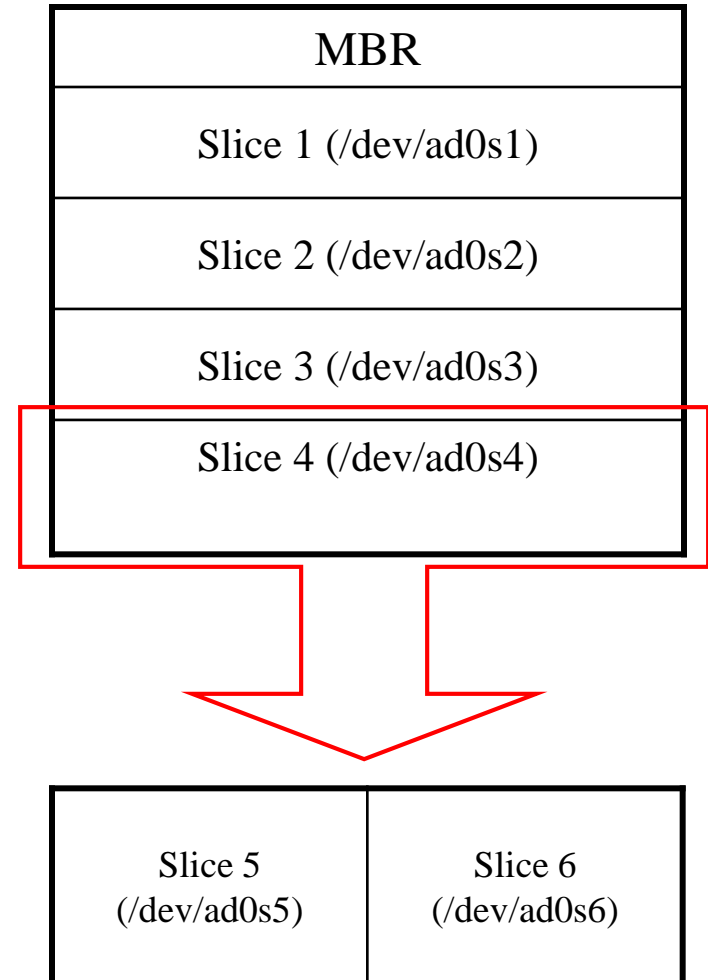
# FreeBSD view of Disk (1)



# FreeBSD View of Disk (2)

## ❑ What is the meaning of ad0s1a

- Disk name
  - ad: IDE, SATA
  - da: SCSI, usb stick
  - Replace { ad | da } by **ada**, and link to ada's
- Slice is equal to the partition of common use
  - Primary partition: s1 ~ s4
  - Extended partition: s5 ~ sn
- Label in each slice
  - a: root partition /
  - b: swap
  - c: entire slice
  - defgh: /usr, /home, ...





# Knowing Your Hardware

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- ❑ CPU
  - 32bit or 64bit
  - Intel 、AMD
  - Architecture: amd64, i386 (, ia64, pc98, powerpc, sparc64)
- ❑ RAM
  - Size
- ❑ HD
  - Size, amount, SCSI or IDE
- ❑ VGA
  - Brand, ram size
- ❑ Sound
  - Brand
- ❑ Network Interface Card
  - Brand
  - IP 、Netmask 、Default gateway 、Hostname 、DNS
- ❑ Other Special device
  - pciconf -lv

# Pre-Installation Tasks

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- Another Hard Disk or Shrink a Partition on Your Hard Drive (20 G)
- One IP (**no private!!**)
- Network Information
  - IP address
  - Subnet mask
  - Default router IP address
  - domain name of the local network
  - DNS server IP address(es)
- Prepare the Installation Media
  - <ftp://tw.freebsd.org/pub/releases/>
  - <http://www.freebsd.org/releases/9.1R/announce.html>

# bsdinstall (FreeBSD 9.2) – (1)

- 說明文件

<http://www.freebsd.org/doc/handbook/bsdinstall.html>

- 下載點

<http://www.freebsd.org/releases/9.2R/announce.html>

```
FreeBSD

Welcome to FreeBSD

1. Boot [ENTER]
2. [Esc] to loader prompt
3. Reboot

Options:
4. [A]CPI Support: Enabled
5. Boot Safe [M]ode: NO
6. Boot [S]ingle User: NO
7. Boot [V]erbose: NO

Autoboot in 8 seconds. [Space] to pause
```

# bsdinstall (FreeBSD 9.2) – (2)

## ❑ Install、Shell、Live CD

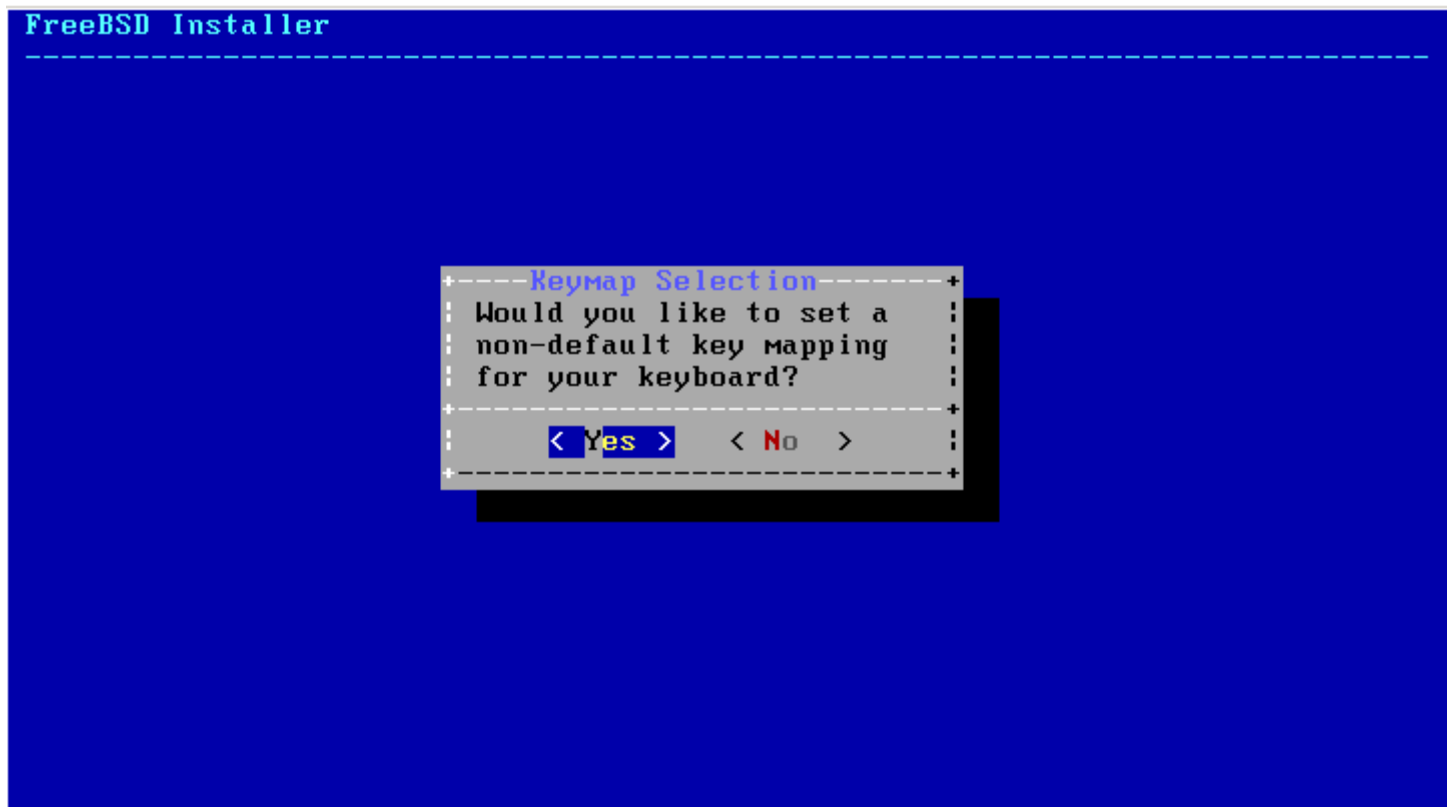
- 沒有要更改就直接選Install

```
FreeBSD Installer
-----
+-----Welcome-----+
| Welcome to FreeBSD! Would you |
| like to begin an installation  |
| or use the live CD?          |
+-----+
| <Install> <Shell> <Live CD> |
+-----+
```

# bsdinstall (FreeBSD 9.2) – (3)

## □ Keymap(更改鍵盤對應)

- 一般選NO



```
FreeBSD Installer
-----
--Keymap Selection--
: Would you like to set a  :
: non-default key mapping :
: for your keyboard?      :
+-----+
: < Yes >  < No >       :
+-----+
```

# bsdinstall (FreeBSD 9.2) – (4)

- ❑ Selecting components to install

```
FreeBSD Installer
-----
--Distribution Select--
Choose optional system components to install:
+-----+
| [ ] doc   Additional documentation
| [*] games Games (fortune, etc.)
| [*] lib32 32-bit compatibility libraries
| [*] ports Ports tree
| [ ] src   System source code
+-----+
+-----+
| < OK > |
+-----+
```

# bsdinstall (FreeBSD 9.2) – (5)

## ❑ Partitioning methods

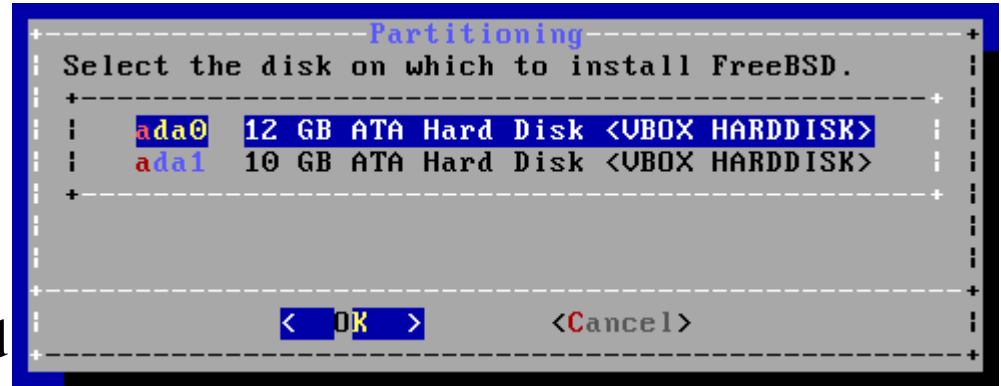
- Shell – gpart(8) 、 fdisk(8) 、 bsdlabell(8)

```
FreeBSD Installer
-----
+-----Partitioning-----+
| Would you like to use the guided |
| partitioning tool (recommended for |
| beginners) or to set up partitions |
| manually (experts)? You can also open a |
| shell and set up partitions entirely by |
| hand. |
+-----+
| <Guided> <Manual> <Shell > |
+-----+
```

# bsdinstall (FreeBSD 9.2) – (6)

## ❑ Guided Partitioning

- Select disk
- Replace { ad | da } by ada
- { ad | da }'s are linked to ada's
- How to partition the disk
  - Entire Disk
  - Partition – use free space





# bsdinstall (FreeBSD 9.2) – (7)

## ❑ Guided Partitioning result

```
FreeBSD Installer
-----
Partition Editor
Please review the disk setup. When complete, press
the Finish button.
+-----+
| ada0      12 GB      GPT      |
|  ada0p1   64 kB     freebsd-boot |
|  ada0p2   11 GB     freebsd-ufs  /  |
|  ada0p3   627 MB    freebsd-swap  none |
|-----|
|
|
|
|
|
|
|
|
|
|
|
+-----+
| <Create> <Delete> <Modify> <Revert> <Auto> <Finish> |
+-----+
Add a new partition
```

# bsdinstall (FreeBSD 9.2) – (8)

## ❑ Manual Partitioning

```
FreeBSD Installer
-----
Partition Editor
Create partitions for FreeBSD. No changes will be
made until you select Finish.
+-----+
| ada0          12 GB |
+-----+
+-----+
| <Create> <Delete> <Modify> <Revert> <Auto> <Finish> |
+-----+
```

Add a new partition

# bsdinstall (FreeBSD 9.2) – (9)

## ❑ Choose a partitioning scheme

- Master Boot Record (MBR)
  - 4 Primary Partition, 1 Extended Partition, multiple Logical Partition
- GUID Partition Table (GPT)
  - 128 Partitions per disk
- **DON'T use BSD!!!**



# bsdinstall (FreeBSD 9.2) – (10)

## ❑ Add partitions

- freebsd-boot
  - FreeBSD boot code. This partition must be first on the disk.



# bsdinstall (FreeBSD 9.2) – (11)

## ❑ Final confirmation

```
FreeBSD Installer
-----
+----- Partition Editor -----+
| Please review the disk setup. When complete, press |
| the Finish button.                               |
+-----+
+----- Confirmation -----+
| Your changes will now be written to disk. If you  |
| have chosen to overwrite existing data, it will  |
| be PERMANENTLY ERASED. Are you sure you want to  |
| commit your changes?                             |
+-----+
| < Commit > < Revert & Exit > < Back > |
+-----+
+-----+
| < Create > < Delete > < Modify > < Revert > < Auto > < Finish > |
+-----+

Exit partitioner (will ask whether to save changes)
```

# bsdinstall (FreeBSD 9.2) – (12)

❑ Fetching → Checksum Verification → Extraction

```
FreeBSD Installer
-----
Archive Extraction
-----
base.txz           [ Done ]
kernel.txz        [ 88% ]
games.txz         [ Pending ]
src.txz           [ Pending ]

Extracting distribution files...

+-Overall Progress-+
| [ 25% ]          |
+-----+

```

# Post-installation

---

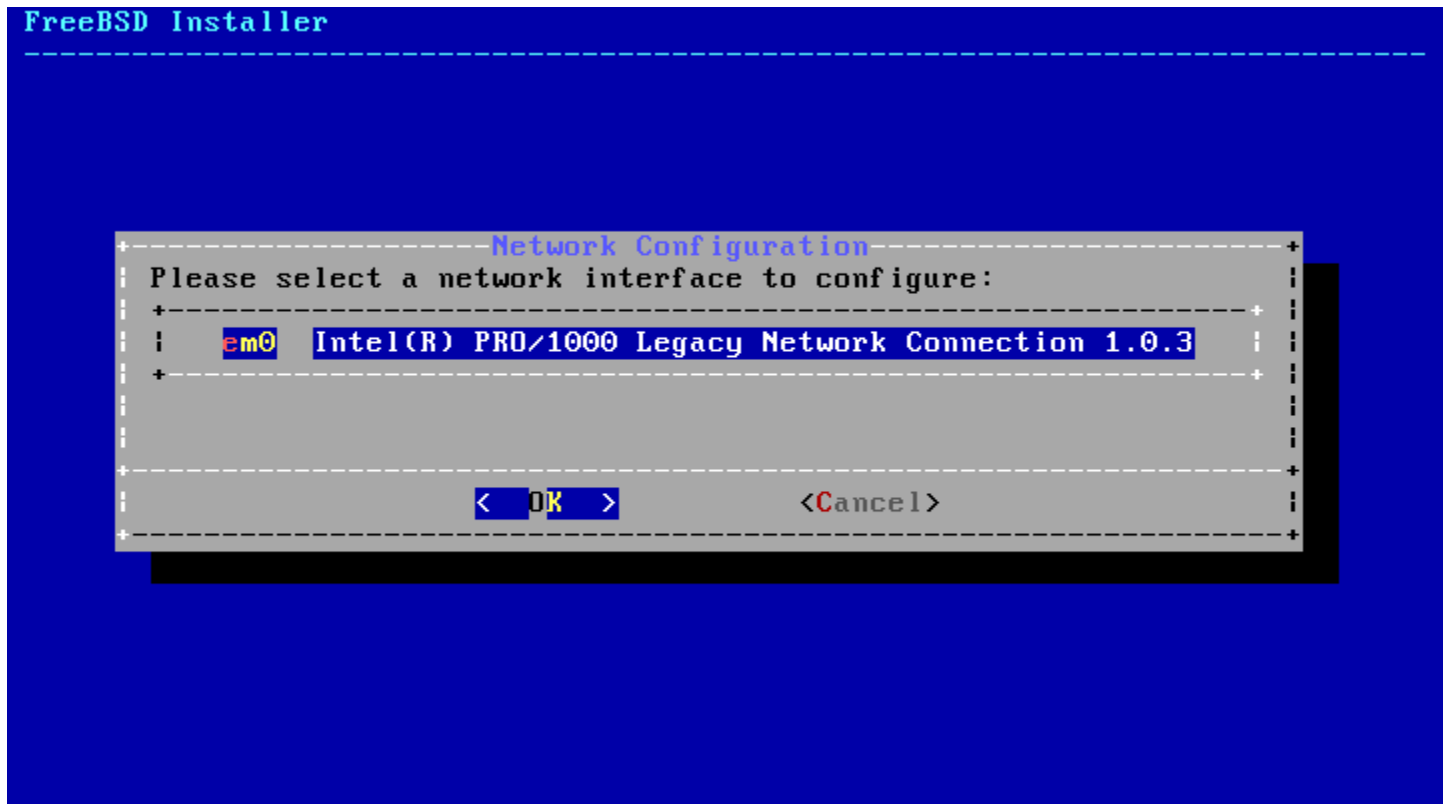
- ❑ Setting the root Password(記得使用鍵盤上方的數字鍵)

```
FreeBSD Installer
=====

Please select a password for the system management account (root):
Changing local password for root
New Password:
Retype New Password:█
```

# Post-installation

## ❑ Network interfaces(選擇網卡)





# Post-installation

## ❑ Configuring IPv4 Networking

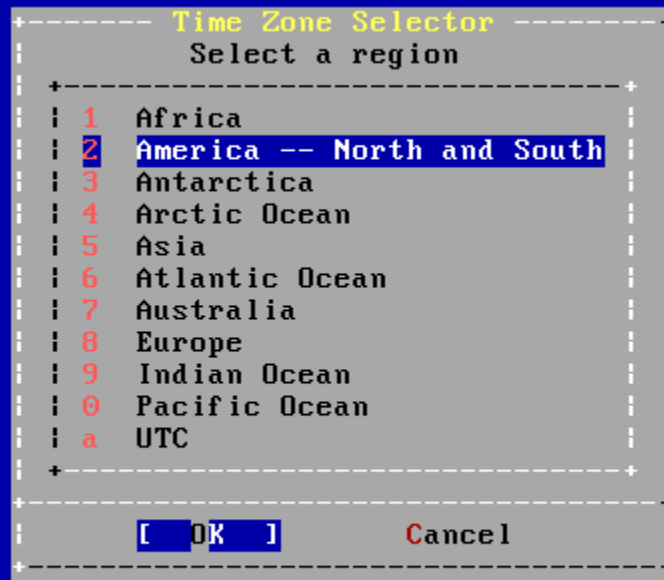
- (IPV4 、 DHCP -> yes , IPV6 -> no)

```
FreeBSD Installer
-----
Network Configuration
-----
Static Network Interface Configuration
-----
|IP Address      192.0.2.142
|Subnet Mask    255.255.255.0
|Default Router 192.0.2.1
-----
< OK >      <Cancel>
```

# Post-installation

## ❑ Setting the Time Zone

- Asia => Taiwan



# Post-installation

## ❑ Selecting Services to Enable

```
FreeBSD Installer
-----
--System Configuration--
Choose the services you would like to be started at
boot:
+-----+
| [*] sshd   Secure shell daemon
| [ ] moused PS/2 mouse pointer on console
| [*] ntpd   Synchronize system and network time
| [ ] powerd Adjust CPU frequency dynamically
+-----+
+-----+
| < OK > |
+-----+
```

# Post-installation

## ❑ Enabling Crash Dumps (no)

```
FreeBSD Installer
-----
+-----Dumpdev Configuration-----+
| Would you like to enable crash dumps? |
| If you start having problems with the |
| system it can help the FreeBSD      |
| developers debug the problem.  But the |
| crash dumps can take up a lot of disk |
| space in /var.                       |
+-----+
| < Yes >          < No >              |
+-----+
```

# bsdinstall (FreeBSD 9.2) – (13)

## ❑ Post-installation

- root password
- Network interfaces
  - Wired – Static IPv4 / DHCP / Static IPv6 / SLAAC
  - Wireless
  - DNS
- Time Zone
- Services
- Add users

```
----- System Configuration -----+
Choose the services you would like to be started at boot:
+-----+
| [*] sshd      Secure shell daemon
| [ ] moused    PS/2 mouse pointer on console
| [*] ntpd      Synchronize system and network time
| [ ] powerd    Adjust CPU frequency dynamically
+-----+
< OK >
```

# Post-installation

---

## ❑ Add Users

- Username - hmwang
- Full name - Hsuan-min WANG
- Uid - User ID. Typically left blank.
- Login group - The user's group. Typically left.
- Invite *user* into other groups? - **wheel**
- Login class - Typically left blank for the default.
- Shell - The interactive shell for this user. CSCC use **tcsh**.
- Home directory - The user's home directory.
- Home directory permissions - The default is usually correct.
- Use password-based authentication? - Typically "yes".
- Use an empty password? - Typically "no".
- Use a random password? - Typically "no".
- Enter password - The actual password for this user.
- Enter password again - The password must be typed again for verification.
- Lock out the account after creation? - Typically "no".

# Post-installation

## ❑ Final Configuration

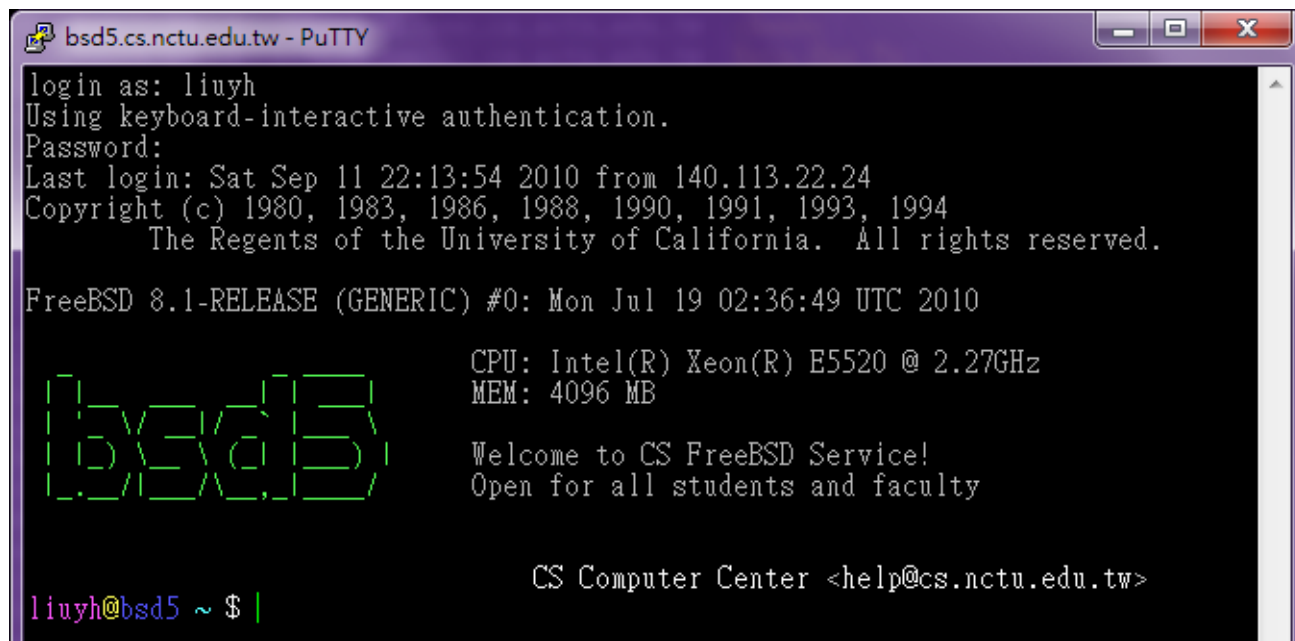
```
FreeBSD Installer
-----
Final Configuration
Setup of your FreeBSD system is nearly complete. You can now
modify your configuration choices. After this screen, you will
have an opportunity to make more complex changes using a shell.
+-----+
| Exit          Apply configuration and exit installer |
| Add User      Add a user to the system             |
| Root Password Change root password                |
| Hostname      Set system hostname                    |
| Network       Networking configuration              |
| Services      Set daemons to run on startup         |
| Time Zone     Set system timezone                  |
| Handbook      Install FreeBSD Handbook (requires network) |
+-----+
< OK >
```

# Login

## ❑ SSH (Secure Shell)

- PuTTY:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>



```
bsd5.cs.nctu.edu.tw - PuTTY
login as: liuyh
Using keyboard-interactive authentication.
Password:
Last login: Sat Sep 11 22:13:54 2010 from 140.113.22.24
Copyright (c) 1980, 1983, 1986, 1988, 1990, 1991, 1993, 1994
    The Regents of the University of California.  All rights reserved.

FreeBSD 8.1-RELEASE (GENERIC) #0: Mon Jul 19 02:36:49 UTC 2010

CPU: Intel(R) Xeon(R) E5520 @ 2.27GHz
MEM: 4096 MB

Welcome to CS FreeBSD Service!
Open for all students and faculty

CS Computer Center <help@cs.nctu.edu.tw>

liuyh@bsd5 ~ $ |
```



# Play with Your FreeBSD

---

## ❑ Useful commands

- passwd, chsh, chfn, chpass
- ls
- ps, top
- mkdir/rmdir
- cp/mv/rm
- write
- man
- login/exit/logout/screen
- Editor: ee, vim, joe, ...etc.
- Connecting: ssh/telnet
- Email reader: mutt, ...etc.
- News reader: tin
- File Transmission: ftp, ncftp, lftp, scp, wget, curl, ...etc.
- Compilers: gcc, g++, javac, ...etc.
- Scripting: perl, php, ruby, python ...etc.

# Help Yourself – man (1)

---

## □ man pages (manual)

- Contain descriptions of
  - Individual command.
    - % man cp
  - File format.
    - % man rc.local
  - Library routines.
    - % man strcpy

# Help Yourself – man (2)

## ❑ Command

- % man [section] *title*
  - % man printf **(printf command)**
  - % man 3 printf **(C Standard printf func.)**
  - % man -k exit **(keyword search)**

%man man

## ❑ Man pages organization

AT&T	BSD	Contents
1	1	User-Level <b>commands</b> and applications
2	2	<b>System calls</b> and kernel error code
3	3	<b>Library</b> calls
4	5	Standard file format
5	7	Miscellaneous files and documents
6	6	Games and demonstrations
7	4	Device Drivers and network protocols
1m	8	System administration commands
9	9	Obscure kernel specs and interfaces

# Conventions

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## □ Syntax of commands:

- Anything between “[” & “]” – are optional.
- Anything followed by “...” – can be repeated.
- {a | b} – you should choose one of them.
- Example:

➤ `bork [-x] { on | off } filename ...`

`bork on /etc/hosts` ○

`bork -x off /etc/hosts /etc/passwd` ○

`bork -x /etc/hosts` X

`bork -h /etc/hosts` X

# HOWTO - Shutdown

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## ❑ FreeBSD Shutdown

- `shutdown -p now`
- `reboot`